UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/883,199	06/19/2001	Hiroshi Shingai	210039US2	9868

22850 7590 06/15/2005

OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER	
ORTIZ CRIADO, JORGE L	
ART UNIT	**PAPER NUMBER**
2655	

DATE MAILED: 06/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/883,199	SHINGAI ET AL.	
	Examiner	Art Unit	
	Jorge L. Ortiz-Criado	2655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 4-7 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 8-11 of U.S. Patent No. 6,515,952 in view of Hosaka et al. J.P. Appl. Phys. Vol. 35.

Claims 8-11 of U.S. Patent No. 6,515,952 shows an optical recording method comprising the step of irradiating recording beam which has been power modulated between a high power and a low power, to the optical recording medium having a phase change recording layer for thereby forming amorphous recorded marks in the recording layer, in which recorded marks having a shortest length of up to 350 nm are formed, said recorded marks including shortest recorded marks having a leading edge and a trailing edge, at least a part of the trailing edge being convex toward the leading edge; wherein

the convex shape at the trailing edge of the shortest recorded marks is formed by causing the regions melted by irradiation of recording beam to crystallize; wherein the shortest recorded marks are formed so as to meet the relationship:

$M_L \leqq 0.4\lambda/NA$, wherein the shortest recorded marks have a length M_L, the recording beam has a wavelength λ, and an objective lens of a recording optical system by which the recording beam is transmitted has a numerical aperture NA; wherein the shortest recorded marks are formed so as to meet the relationship:

$M_W/M_L>1$ wherein the shortest recorded marks have a width M_W and a length M_L

The above recording medium being a phase change recording medium containing a phase change recording layer, in which recorded marks having a shortest length of up to 350 nm are formed, but not expressly a phase change layer containing antimony as main component and not including Ag.

However, this feature is well known in the art and is evidenced by Hosaka et al., which discloses an optical recording medium having a phase change recording layer containing antimony as a main component, in which recorded marks having a shortest length of up to 350 nm are formed, wherein said recording layer does not include Ag.

It would have been obvious to one with an ordinary skill in the art to include the specific phage change recording layer of containing antimony as main component and not including Ag, in order obtain a nanometer-sized recording and achieving ultra-high recording density.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 4-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 4:

Claim 4 recites a recording method for an optical recording medium, but only a desired result of record marks is recited in the claim. Accordingly, it is unclear from the claim as to how forming amorphous recorded marks in the recording layer including shortest recorded marks having a leading edge and a trailing edge, at least a part of the trailing edge being convex toward the leading edge since there is no method step provided in the claim to perform any function in order to get such desired result.

Claims 5-7 fall with their parent claim 4.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 1-3 are rejected under 35 U.S.C. 102(a) as being anticipated by "the admitted prior art"

Regarding claims 1- 3, the admitted prior art discloses an optical recording medium having a phase change recording layer containing antimony as a main component, in which recorded marks having a shortest length of up to 350 nm are formed, wherein said recording layer does not include Ag; wherein said recording layer further contains tellurium or indium or both as a main component; and wherein said recording layer further contains at least one element selected from the group consisting of germanium, nitrogen and rare earth elements as an auxiliary component (see page 3, lines 5-28)

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Hosaka et al. J.P. Appl. Phys. Vol. 35, pp. 443-447.

Regarding claims 1-3, Hosaka et al. discloses an optical recording medium having a phase change recording layer containing antimony as a main component, in which recorded marks having a shortest length of up to 350 nm are formed, wherein said recording layer does not include Ag (See page 443; page 444 section 2.2 to 3.1)

wherein said recording layer further contains tellurium or indium or both as a main component; and (see page 444 section 2.2)

wherein said recording layer further contains at least one element selected from the group consisting of germanium, nitrogen and rare earth elements as an auxiliary component (see page 444 section 2.2)

6. Claims 1-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Kikukawa et al. U.S. Patent No. 6,515,952.

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Regarding claim 1, Kikukawa et al. discloses an optical recording medium having a phase change recording layer containing antimony as a main component, in which recorded marks having a shortest length of up to 350 nm are formed, wherein said recording layer does not include Ag (See col. 3, lines 41-55; col. 7 lines 25-55; col. 13, lines 21-31)

Regarding claim 2, Kikukawa et al. discloses wherein said recording layer further contains tellurium or indium or both as a main component (See col. 3, lines 41-55; col. 7 lines 25-55; col. 13, lines 21-31)

Regarding claim 3, Kikukawa et al. discloses wherein said recording layer further contains at least one element selected from the group consisting of germanium, nitrogen and rare earth elements as an auxiliary component (See col. 3, lines 41-55; col. 7 lines 25-55; col. 13, lines 21-31).

Regarding claim 4, Kikukawa et al. discloses an optical recording method comprising the step of irradiating recording beam which has been power modulated between a high power and a low power, to the optical recording medium of any one of claims 1 to 3 for thereby forming amorphous recorded marks in the recording layer (See col. 2 lines 19-54; Figs. 7, 8),

said recorded marks including shortest recorded marks having a leading edge and a trailing edge, at least a part of the trailing edge being convex toward the leading edge (See col. 2 lines 19-54; Figs. 7, 8).

Regarding claim 5, Kikukawa et al. discloses wherein the convex shape at the trailing edge of the shortest recorded marks is formed by causing the regions melted by irradiation of recording beam to crystallize (See col. 2 lines 19-54; Figs. 7, 8)

Regarding claim 6, Kikukawa et al. discloses wherein the shortest recorded marks are formed so as to meet the relationship:

$M_L \leqq 0.4\lambda/NA$, wherein the shortest recorded marks have a length M_L, the recording beam has a wavelength λ, and an objective lens of a recording optical system

by which the recording beam is transmitted has a numerical aperture NA. (See col. 2 lines 19-54; Figs. 7, 8)

Regarding claim 7, Kikukawa et al. discloses wherein the shortest recorded marks are formed so as to meet the relationship:

$M_W/M_L>1$ wherein the shortest recorded marks have a width M_W and a length M_L (See col. 2 lines 19-54; Figs. 7, 8)

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. U.S. patent No. 6,319,582 to Tominaga et al.; U.S. patent no. 6,348,251 and U.S. Patent No. 6,358,589 to Tsai et al., which discloses an optical recording medium having a phase change recording layer containing antimony as a main component, in which recorded marks having a shortest length of up to 350 nm are formed, wherein said recording layer does not include Ag; wherein said recording layer further contains tellurium or indium or both as a main component; and wherein said recording layer further contains at least one element selected from the group consisting of germanium, nitrogen and rare earth elements as an auxiliary component.

b. J.P. 11-073692 to Takahashi et al., which discloses an optical phase change recording medium having a phase change layer containing antimony as main component and not including Ag.

c. J.P. 09-007176 to Takada et al., which discloses an optical recording method comprising the step of irradiating recording beam which has been power modulated between a high power and a low power, to the optical recording medium having a phase change layer containing antimony as main component and not including Ag for thereby forming amorphous recorded marks in the recording layer.

d. E.P. 0871164 and to Utsunomiya et al, which discloses an optical recording which discloses an optical recording medium having a phase change recording layer containing antimony as a main component, wherein said recording layer does not include Ag; wherein said recording layer further contains tellurium or indium or both as a main component; and wherein said recording layer further contains at least one element selected from the group consisting of germanium, nitrogen and rare earth elements as an auxiliary component.

e. E.P. 1011099 to Kikukawa et al., which discloses an optical recording medium having a phase change recording layer containing antimony as a main component, in which recorded marks having a shortest length of up to 350 nm are formed, wherein said recording layer does not include Ag; wherein said recording layer further contains tellurium or indium or both as a main component; and wherein said recording layer further contains at least one element selected from the group consisting of germanium, nitrogen and rare earth elements as an auxiliary component.

f. J.P. 11-110817 and 11-096554 to Tominaga et al., which discloses an optical recording medium having a phase change recording layer containing

antimony as a main component, in which recorded marks having a shortest length of up to 350 nm are formed, wherein said recording layer does not include Ag.

Response to Arguments

8. Applicant's arguments with respect to claims 1-7 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jorge L. Ortiz-Criado whose telephone number is (571) 272-7624. The examiner can normally be reached on Mon.-Thu.(8:30 am - 6:00 pm),Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne R. Young can be reached on (571) 272-7582. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

joc

W. R. YOUNG
PRIMARY EXAMINER